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EXAMINER

JAGOE, DONNA A

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1614

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*Date mailed 4.12.4*

**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Paper No. 04032004

Application Number: 09/728,121  
Filing Date: December 04, 2000  
Appellant(s): MASUHARA ET AL.

Thomas Cunningham  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 10 December 2003.

**(1) *Real Party in Interest***

A statement identifying the real party in interest is contained in the brief.

**(2) *Related Appeals and Interferences***

A statement identifying the related appeals and interferences which will directly affect or be directly affected by or have a bearing on the decision in the pending appeal is contained in the brief.

**(3) *Status of Claims***

The statement of the status of the claims contained in the brief is correct.

**(4) *Status of Amendments After Final***

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) *Summary of Invention***

The summary of invention contained in the brief is deficient because it does not disclose that claims 25-43 are drawn to a dental material comprising a photocatalytic titanium oxide or photocatalytic titanium oxide precursor and a silicon compound. Claims 44-50 are drawn to a method of applying a photocatalytic titanium oxide or a

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photocatalytic titanium oxide precursor and a silicon compound to a surface selected from the group consisting of teeth, gums, and a dental material that is fitted in within the mouth, on oral mucous membrane.

**(6) *Issues***

The appellant's statement of the issues in the brief is correct.

**(7) *Grouping of Claims***

Appellant's brief includes a statement that claims 25-35, claims 36-38 and claims 39-43 do not stand or fall together and provides reasons as set forth in 37 CFR 1.192(c)(7) and (c)(8).

**(8) *Claims Appealed***

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(9) *Prior Art of Record***

6165256

Hayakawa et al.

12-2000

Remington's Pharmaceutical Science, 15th edition, 1975, Mack Publishing Co. Chapter 25, pages 384-385.

**(10) Grounds of Rejection**

The following ground(s) of rejection are applicable to the appealed claims:

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 25, 26, 28, 29 and 31-43 are rejected under 35 U.S.C. 102(b) as being anticipated by Hayakawa et al. U.S. Patent No. 6,165,256 A.

The claims are drawn to compositions comprising a photocatalytic titanium oxide or a photocatalytic titanium oxide precursor and a silicon compound of formula (I), a hydrolyzate of said silicon compound I, a silicone resin, silicone resin precursor or silica in a liquid medium with a ratio of Ti/Si of 20/1 to 1/100. Claim 28 is drawn to the composition of claim 25 wherein the silicone resin precursor is selected from the group consisting of a silane compound, a silazane and a mixture thereof. Claim 29 is directed to the liquid media such as an alcohol. Claim 31 is drawn to the composition of claim 25 further comprising at least one particle selected from the group consisting of silver,

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copper, zinc, metal salt and mixtures thereof. Claims 36-38 is drawn to a film comprising the composition of claim 25. Claims 40-43 are drawn to the tooth crown restorative material, denture, denture base, denture rebase, orthodontic base, wire, bridge or mouth piece comprising the above photocatalytic titanium oxide or photocatalytic oxide precursor and silicon compound of formula (I)

Hayakawa et al. teach a composition comprising a photocatalytic metallic oxide (see abstract) such as titanium oxide (column 7, lines 27-30) and tetrafunctional hydrolyzable silane derivatives (see column 7, line 56 bridging to column 9, line 7). The ratio of Ti/Si is shown in the examples (column 15, line 12 to column 24, line 35). The example recited in column 15, lines 18-23 recites a ratio of Ti/Si of 8/2 (this would translate to 16/1. The next example in column 15 recites a ratio of Ti/Si of 1/1. These ratios are encompassed by the instantly claimed ratio of 20/1 to 1/100 or 20/1 to 1/1 (claim 26).

The intended use must result in a structural difference between the claimed invention and the prior art in order to patentably distinguish the claimed invention from the prior art. Since the photocatalytic titanium oxide of the patent are capable of performing the intended use of coating dental materials, then it meets the claim.

Regardless, the photocatalytic titanium oxide composition of the patent appears to be useful for dental mouth mirrors (column 5, line 65) and converging lenses for laser dental treatment equipment (column 6, lines 15-16) which reads on dental material applied in the mouth of the instant claims. Instant claim 31, drawn to an additional particle selected from the group consisting of silver, copper, zinc, metal salt and

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mixtures thereof is recited in column 12, lines 46-55. Claim 29, which recites the titanium oxide diluted in liquid media is recited in example A1, column 15. The composition is applied to glass. The thin film of instant claims 36-38 is recited in column 13, lines 23-35. Instant claim 34 recites the film as baked or dried onto the surface. Column 13, lines 36-45 recites the thin film dried or cured onto the surface.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
2. Ascertaining the differences between the prior art and the claims at issue.
3. Resolving the level of ordinary skill in the pertinent art.
4. Considering objective evidence present in the application indicating obviousness or nonobviousness.

This application currently names joint inventors. In considering patentability of the claims under 35 U.S.C. 103(a), the examiner presumes that the subject matter of the various claims was commonly owned at the time any inventions covered therein were made absent any evidence to the contrary. Appellant is advised of the obligation under 37 CFR 1.56 to point out the inventor and invention dates of each claim that was

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not commonly owned at the time a later invention was made in order for the examiner to consider the applicability of 35 U.S.C. 103(c) and potential 35 U.S.C. 102(e), (f) or (g) prior art under 35 U.S.C. 103(a).

Claims 27 and 30 are rejected under 35 U.S.C. 103(a) as being unpatentable over Hayakawa et al. as applied to claims 25, 26, 28, 29 and 31-43 above, and further in view of Remington's Pharmaceutical Science.

Claim 27 recites the composition of claim 25 wherein the photocatalytic titanium dioxide precursor is titanium alkoxide. It would have been obvious to substitute titanium alkoxide for titanium oxide since Hayakawa et al. teach photocatalytic particles of a metallic oxide and since it is known that titanium alkoxide is a photocatalytic metallic oxide. Such a modification would have been motivated by the reasoned expectation of producing a photocatalytic composition which is effective in comprehensively initiating a radical reaction to cause the oxidation of organic products under the appropriate wavelength as in Hayakawa et al.

Claim 30 is drawn to the composition of claim 25 and further comprising a thickener. It would have been obvious to incorporate a thickener in the composition of the instant application since silica is known to be a thickener as recited in Remington's Pharmaceutical Sciences (page 385, 2<sup>nd</sup> full paragraph).



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**(11) Response to Argument**

Appellant asserts that Hayakawa et al., U.S. Patent No. 6,165,256 does not disclose or suggest every element of claims 25-35 nor claims 36-38 or 39-43. Appellant argues that to anticipate a claim, a prior art document must disclose every element of the claim and cites Verdegaal Bros. v. Union Oil Co. of California, 2 USPQ2d 1051, 1053 (Fed. Cir. 1987), see also MPEP 2131.01.

In response to Appellant's arguments, the recitation "a dental material" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

Appellant asserts that claim 25 requires "a dental material..." that "is a material that is fitted within or applied in the mouth". It is the examiners position that Hayakawa et al. recites a photocatalytic titanium oxide composition of that is useful for dental mouth mirrors (column 5, line 65) and converging lenses for laser dental treatment equipment (column 6, lines 15-16) which reads on dental material applied in the mouth of the instant claims.

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Appellant further argues that claims 36-38 requires that the dental material is a film that has been applied within the mouth. The examiner is not in agreement. Claims 36-38 recite a dental material of claim 25, which is a film that is applied within the mouth **or to a material fitted within the mouth**. Since the dental mirror/converging laser dental treatment equipment (column 5, line 65 and column 6, lines 15-16) is coated with a surface layer film (see column 5, lines 5-21), and upon dental examination it is fitted in the mouth, it meets the instant claims. Appellant asserts that the claim requires that the film be applied to the tooth, when the claim clearly allows alternatives such as “material fitted within the mouth” and “mouth piece”. Since Appellant does not provide a definition of the “**mouth piece**” or “**material fitted within the mouth**”, a dental mirror, fitted into the patients mouth during examination, coated with a photocatalyzable titanium oxide and silicone composition anticipates the claims. During patent examination, claims must be interpreted as broadly as they reasonably allow, in order to achieve complete exploration of appellant's invention and its relationship to prior art, so that ambiguities can be recognized, scope and breadth of language explored, and clarification imposed.

Claims 40-43 similarly are drawn to *inter alia* a “mouth piece” comprising a composition comprising a photocatalytic titanium oxide and silicone compound of formula (I) and a liquid media in a ratio of 20/1 to 1/100 or 20/1 to 1/1. Claim 42 contains the limitation wherein the “mouth piece” is dried or baked. Hayakawa et al. disclose the composition applied to a surface and then the surface is dried or cured to form a thin film (column 13, lines 18-22).

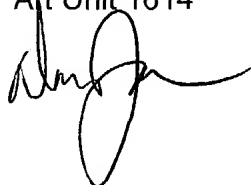
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Appellant further asserts that the Advisory Action<sup>1</sup> ignores the express limitations in claims 25-43 to the particular physical or structural forms of the claimed dental materials. It is the examiners position that the claimed "dental materials" would include dental mirrors and converging laser dental treatment equipment of Hayakawa et al.

For the above reasons, it is believed that the rejections should be sustained.

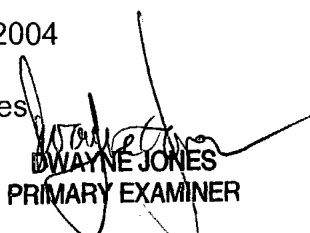
Respectfully submitted,

Donna Jagoe  
Patent Examiner  
Art Unit 1614




dj  
April 5, 2004

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<sup>1</sup> The request for reconsideration has been considered but does NOT place the application in condition for allowance because: claims 25-43 are viewed as intended use. Statements in the preamble reciting the purpose or intended use of the claimed invention must be evaluated to determine whether the recited purpose or intended use results in a structural difference between the claimed invention and the prior art. If a prior art structure is capable of performing the intended use as recited in the preamble, then it meets the claim. Since the composition of Hayakawa et al. is capable of performing the intended use of coating dental material, it meets the claims.